

## CLAIMS

1. In a system comprising a client, a context management (CM) server and a network that couples the client to the server, the client executing at least one client application that shares a context with another application for a period of time, the CM server executing a context management service to manage the context, a method of facilitating communication between the client and the CM server, the method comprising acts of:
  - (a) establishing a connection, through the network, between the client and the CM server to enable communication between the CM server and the client; and
  - (b) maintaining the connection between the client and the CM server for the period of time during which the at least two applications share the context.
2. The method of claim 1, wherein the act (a) further comprises establishing a backchannel connection between the client and the CM server through TCP/IP.
3. The method of claim 2, wherein the network includes security facilities that prevent the CM server from establishing a connection to the client.
4. The method of claim 1, wherein the client comprises a locator utility, and wherein the act (a) comprises an act of establishing the connection between the locator utility and the CM server.
5. The method of claim 4, further comprising an act of using the connection to transmit communication from the CM server to the client for communication transactions initiated by the CM server.
6. The method of claim 5, further comprising an act of using the connection to conduct a plurality of transactions between the client and the CM server.

7. The method of claim 4, further comprising an act (c) of transmitting a communication from the CM server to the at least one client application, the act of transmitting comprising:

- 5 (c1) transmitting the communication from the CM server to the locator utility;  
and  
(c2) relaying the communication from the locator utility to the at least one client application.

8. The method of claim 7, wherein the act (c1) comprises an act of including in the communication information that identifies the at least one of the client applications.

9. The method of claim 1, wherein the at least one client application is selected from a group consisting of a COM-based application, a browser, a client for a remotely emulated application, and an application that is emulated on a remote client.

10. The method of claim 1, wherein the context shared by the at least one client application comprises a user identity for purposes of a single sign-on for the at least one client application and the other application.

11. The method of claim 1, wherein the act (a) further comprises the client initiating the connection with the CM server.

12. The method of claim 1, wherein the system comprises a plurality of clients coupled to the server via the network, each of the plurality of clients executing at least one client application that shares the context for the period of time,

25 wherein the method facilitates communication between the plurality of clients and the CM server;

wherein the act (a) comprises establishing connections, through the network, between each of the plurality of clients and the CM server to enable communication between the CM server and the plurality of clients; and

wherein the act (b) comprises maintaining the connections between the plurality of clients and the CM server for the period of time during which the plurality of applications share the context.

- 5     13.     In a system comprising at least one client, at least one web server, and a context management (CM) server coupled to the at least one client and the at least one web server, the at least one client and the at least one web server executing a plurality of applications that share a context, the plurality of applications comprising at least one web application that is executed on the web server, the at least one client having at least one
- 10     browser that enables the at least one client to access the at least one web application, the CM server executing a context management service to manage the context, a method of facilitating a requested change in at least one aspect of the context, the requested change being initiated by an instigator from among the plurality of applications, the method comprising acts of, in response to a change decision being reached as to whether each of
- 15     the plurality of applications is amenable to the requested change:
- (a)     publishing the change decision directly from the CM server to the plurality of applications; and
  - (b)     contacting the at least one browser, directly from the CM server, so that the instigator need not contact the at least one browser, to inform the browser that
- 20     its corresponding at least one web application has been updated.
14.     The method of claim 13, wherein the system further comprises a network that couples the CM server to the at least one client, and wherein the act (b) comprises an act of contacting the at least one browser over the network.
- 25     15.     The method of claim 13, wherein the at least one browser has an associated listener that, when contacted, informs the browser to contact its corresponding web server for an update of the at least one web application, and wherein the act (b) comprises an act of contacting the listener directly from the CM server, so that the
- 30     instigator need not contact the listener, to inform the browser that its corresponding at least one web application has been updated.

16. The method of claim 13, the requested change involves a change to a value of a subject of the context.

5 17. The method of claim 13, wherein aside from contacting the at least one browser directly from the CM server in response to a change decision being reached, the plurality of applications and the CM server implement the context in a manner that complies with the CCOW standard.

10 18. At least one computer-readable medium encoded with instructions for performing a method in a system comprising a client, a context management (CM) server and a network that couples the client to the server, the client executing at least one client application that shares a context with another application for a period of time, the CM server executing a context management service to manage the context, the method for  
15 facilitating communication between the client and the CM server, the method comprising acts of:

(a) establishing a connection, through the network, between the client and the CM server to enable communication between the CM server and the client; and  
(b) maintaining the connection between the client and the CM server for the  
20 period of time during which the at least two applications share the context.

19. The at least one computer-readable medium of claim 18, wherein the act (a) further comprises establishing a backchannel connection between the client and the CM server through TCP/IP.

25

20. The at least one computer-readable medium of claim 19, wherein the network includes security facilities that prevent the CM server from establishing a connection to the client.

21. The at least one computer-readable medium of claim 18, wherein the client comprises a locator utility, and wherein the act (a) comprises an act of establishing the connection between the locator utility and the CM server.

5 22. The at least one computer-readable medium of claim 21, wherein the method further comprises an act of using the connection to transmit communication from the CM server to the client for communication transactions initiated by the CM server.

23. The at least one computer-readable medium of claim 22, wherein the method  
10 further comprises using the connection to conduct a plurality of transactions between the client and the CM server.

24. The at least one computer-readable medium of claim 21, wherein the method further comprises an act (c) of transmitting a communication from the CM server to the  
15 at least one client application, the act of transmitting comprising:

- (c1) transmitting the communication from the CM server to the locator utility;  
and
- (c2) relaying the communication from the locator utility to the at least one  
client application.

20

25. The at least one computer-readable medium of claim 24, wherein the act (c1) comprises an act of including in the communication information that identifies the at least one of the client applications.

25 26. The at least one computer-readable medium of claim 18, wherein the at least one client application is selected from a group consisting of a COM-based application, a browser, a client for a remotely emulated application, and an application that is emulated on a remote client.

27. The at least one computer-readable medium of claim 18, wherein the context shared by the at least one client application comprises a user identity for purposes of a single sign-on for the at least one client application and the other application.

5 28. The at least one computer-readable medium of claim 18, wherein the act (a) further comprises the client initiating the connection with the CM server.

29. The at least one computer-readable medium of claim 18, wherein the system comprises a plurality of clients coupled to the server via the network, each of the  
10 plurality of clients executing at least one client application that shares the context for the period of time, wherein the method facilitates communication between the plurality of clients and the CM server, wherein the act (a) comprises establishing connections, through the network, between each of the plurality of clients and the CM server to enable communication between the CM server and the plurality of clients; and wherein the act  
15 (b) comprises maintaining the connections between the plurality of clients and the CM server for the period of time during which the plurality of applications share the context.

30. At least one computer-readable medium encoded with instructions for performing a method in a system comprising at least one client, at least one web server, and a  
20 context management (CM) server coupled to the at least one client and the at least one web server, the at least one client and the at least one web server executing a plurality of applications that share a context, the plurality of applications comprising at least one web application that is executed on the web server, the at least one client having at least one browser that enables the at least one client to access the at least one web application, the  
25 CM server executing a context management service to manage the context, the method for facilitating a requested change in at least one aspect of the context, the requested change being initiated by an instigator from among the plurality of applications, the method comprising acts of, in response to a change decision being reached as to whether each of the plurality of applications is amenable to the requested change:  
30 (a) publishing the change decision directly from the CM server to the plurality of applications; and

(b) contacting the at least one browser, directly from the CM server, so that the instigator need not contact the at least one browser, to inform the browser that its corresponding at least one web application has been updated.

5     31.     The at least one computer-readable medium of claim 30, wherein the system further comprises a network that couples the CM server to the at least one client, and wherein the act (b) comprises an act of contacting the at least one browser over the network.

10    32.     The at least one computer-readable medium of claim 30, wherein the at least one browser has an associated listener that, when contacted, informs the browser to contact its corresponding web server for an update of the at least one web application, and wherein the act (b) comprises an act of contacting the listener directly from the CM server, so that the instigator need not contact the listener, to inform the browser that its  
15    corresponding at least one web application has been updated.

33.     The at least one computer-readable medium of claim 30, the requested change involves a change to a value of a subject of the context.

20    34.     The at least one computer-readable medium of claim 30, wherein aside from contacting the at least one browser directly from the CM server in response to a change decision being reached, the plurality of applications and the CM server implement the context in a manner that complies with the CCOW standard.

25    35.     A context management server for use in a system comprising a client, the context management server and a network that couples the client to the context management server, the client executing at least one client application that shares a context with another application for a period of time, the context management server comprising:  
            at least one processor to execute a context management service to manage the  
30    context; and

at least one controller that maintains a connection through the network with the client for the period of time during which the at least two applications share the context.

36. The context management server of claim 35, wherein the context management  
5 server further maintains a backchannel connection between the client and the context management server through TCP/IP.

37. The context management server of claim 36, in combination with the network  
and the client to form the system, wherein the context management server is prevented  
10 by security facilities on the network that prevent the context management server from establishing a connection to the client.

38. The context management server of claim 35, wherein the client comprises a  
locator utility, and wherein the controller maintains the connection between the locator  
15 utility and the context management server.

39. The context management server of claim 38, wherein the controller uses the  
connection to transmit communication from the context management server to the client  
for communication transactions initiated by the context management server.

20

40. The context management server of claim 39, wherein the controller uses the  
connection to conduct a plurality of transactions between the client and the context  
management server.

25 41. The context management server of claim 38, wherein the controller transmits a  
communication via the locator utility to the at least one client application.

42. The context management server of claim 41, wherein the controller further  
includes in the communication information that identifies the at least one of the client  
30 applications.



43. The context management server of claim 35, wherein the context shared by the at least one client application comprises a user identity for purposes of a single sign-on for the at least one client application and the other application.

5 44. The context management server of claim 35, wherein the controller maintains a network connection which is initiated by the client with the context management server.

45. The context management server of claim 35, wherein the system comprises a plurality of clients coupled to the server via the network, each of the plurality of clients  
10 executing at least one client application that shares the context for the period of time, and wherein the controller is further adapted to:

establish connections, through the network, between each of the plurality of clients and the CM server to enable communication between the CM server and the plurality of clients; and

15 maintain the connections between the plurality of clients and the CM server for the period of time during which the plurality of applications share the context.

46. A context management (CM) server for use in a system comprising at least one  
20 client, at least one web server, and a context management server coupled to the at least one client and the at least one web server, the at least one client and the at least one web server executing a plurality of applications that share a context, the plurality of applications comprising at least one web application that is executed on the web server, the at least one client having at least one browser that enables the at least one client to  
25 access the at least one web application, the CM server comprising:

at least one processor to execute a context management service to manage the context; and

at least one controller that:

30 facilitates a requested change in at least one aspect of the context, the requested change being initiated by an instigator from among the plurality of applications; and

in response to a change decision being reached as to whether each of the plurality of applications is amenable to the requested change:

(a) publishes the change decision directly to the plurality of applications; and

5 (b) contacts the at least one browser, so that the instigator need not contact the at least one browser, to inform the browser that its corresponding at least one web application has been updated.

47. The context management server of claim 46, wherein the system further  
10 comprises a network that couples the CM server to the at least one client, and wherein the controller contacts the at least one browser over the network.

48. The context management server of claim 46, wherein the at least one browser has an associated listener that, when contacted, informs the browser to contact its  
15 corresponding web server for an update of the at least one web application, and wherein the controller contacts the listener directly from the CM server, so that the instigator need not contact the listener, to inform the browser that its corresponding at least one web application has been updated.

20 49. The context management server of claim 46, wherein the controller further processes a requested change which involves a change to a value of a subject of the context.

50. The context management server of claim 46, wherein aside from contacting the at  
25 least one browser directly from the context management server in response to a change decision being reached, the context management server and the plurality of applications implement the context in a manner that complies with the CCOW standard.

51. A client computer for use in a system comprising the client computer, a context  
30 management (CM) server and a network that couples the client computer to the CM server, the client computer comprising:

at least one processor to execute at least one client application that shares a context with another application for a period of time; and

at least one controller that maintains a network connection with the CM server for the period of time during which the at least two applications share the context.

5

52. The client computer of claim 51, wherein the connection is a backchannel connection established between the client computer and the CM server through TCP/IP.

53. The client computer of claim 52, wherein the network includes security facilities  
10 that prevent the CM server from establishing a connection to the client computer.

54. The client computer of claim 51, wherein the client computer further comprises a locator utility, and wherein the connection is established between the locator utility and the CM server.

15

55. The client computer of claim 54, wherein the client computer is adapted to receive over the connection communications transmitted from the CM server to the client for communication transactions initiated by the CM server.

20 56. The client computer of claim 55, wherein the at least one controller uses the connection to conduct a plurality of transactions between the client computer and the CM server.

57. The client computer of claim 54, wherein the locator utility is adapted to receive  
25 communications from the CM server to the at least one client application, and to relay the communications from the locator utility to the at least one client application.

58. The client computer of claim 57, wherein the communications include information that identifies the at least one of the client applications.

30

59. The client computer of claim 51, wherein the at least one client application is selected from a group consisting of a COM-based application, a browser, a client for a remotely emulated application, and an application that is emulated on a remote client.

5 60. The client computer of claim 51, wherein the context shared by the at least one client application comprises a user identity for purposes of a single sign-on for the at least one client application and the other application.

61. The client computer of claim 51, wherein the at least one controller is adapted to  
10 initiate the connection with the CM server.

62. In a system comprising an application computer executing an application that shares a context with at least one other application, a context management (CM) server executing a context management service to manage the context, a network that couples  
15 the application computer to the CM server, and a network security facility creating a boundary between a protected environment and an external environment, wherein one of the application computer and the CM server is disposed in the protected environment and the other is disposed in the external environment, and wherein the network security facility prevents direct connections between the application computer and the CM server  
20 from being initiated by the one of the application computer and the CM server disposed in the external environment, a method of facilitating communication between the application computer and the CM server, the method comprising acts of:

- (a) providing a gateway computer in the protected environment;
- (b) enabling the one of the application computer and the CM server that is  
25 disposed in the external environment to initiate a connection with the gateway computer; and
- (c) passing at least one communication, through the gateway computer, from the one of the application computer and the CM server disposed in the external environment to the other to enable the one of the application computer and the  
30 CM server disposed in the external environment to initiate communication with the other.

63. The method of claim 62, wherein the application computer is a client computer providing a desktop interface for a user.

5 64. The method of claim 62, wherein the application computer is a web server.

65. The method of claim 62, wherein the application computer is a remote application server so that the application is emulated on a remote client.

10 66. The method of claim 62, wherein the application computer is disposed in the protected environment.

67. The method of claim 62, wherein the CM server is disposed in the protected environment.

15

68. The method of claim 62, wherein the network security facility comprises a firewall, and the act (b) comprises providing a hole in the firewall that enables the one of the application computer and the CM server disposed in the external environment to initiate a connection with the other through the hole in the firewall.

20

69. The method of claim 68, wherein the act (b) comprises creating a hole in the firewall that limits communications from passing through to only communications originating from the one of the application computer and the CM server disposed in the external environment and directed to the gateway computer.

25

70. The method of claim 69, wherein the act (b) comprises creating a hole in the firewall that limits communications from passing through to only specified types of communications originating from the one of the application computer and the CM server disposed in the external environment and directed to the gateway computer.

30